FIG.1

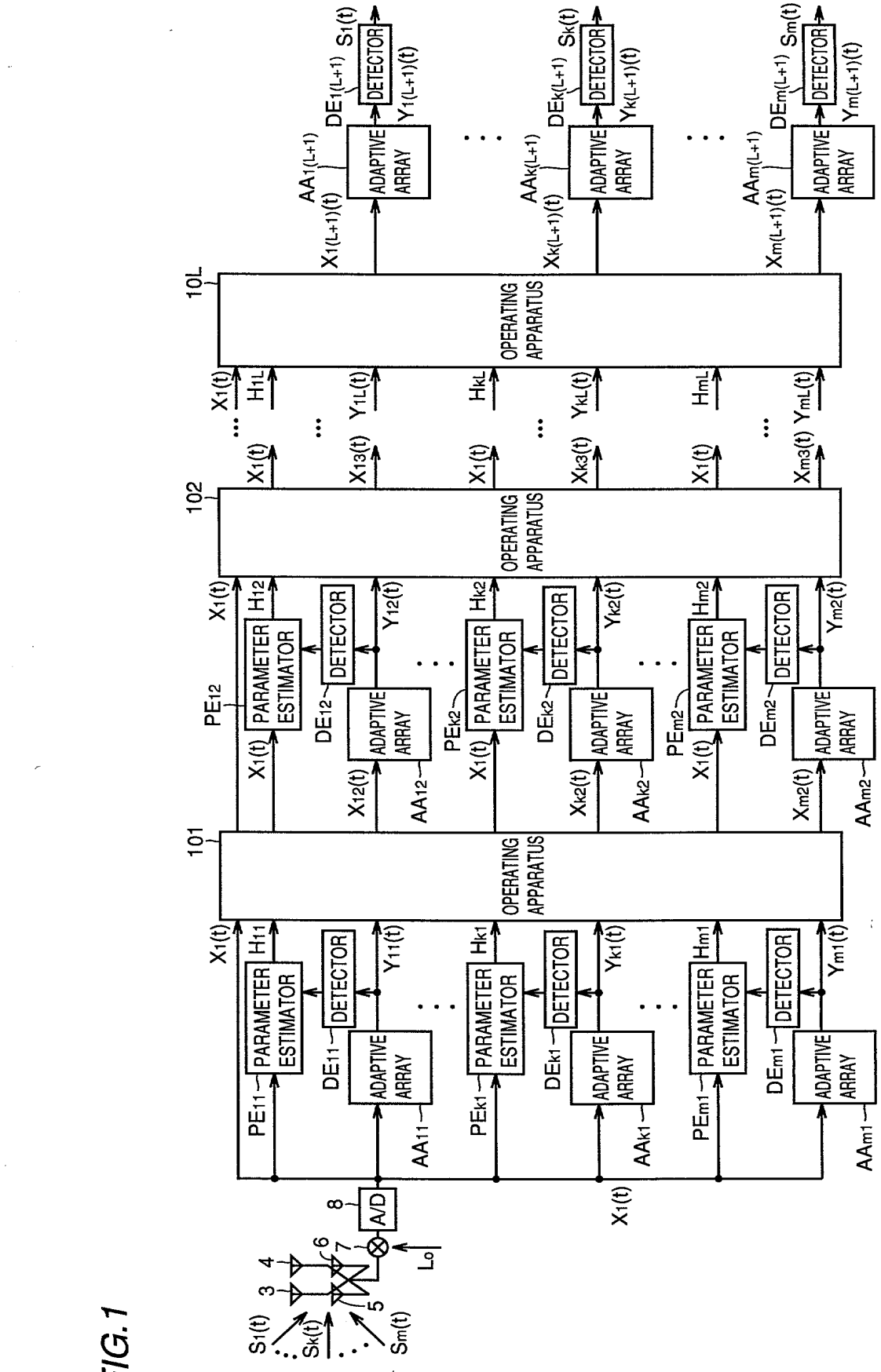
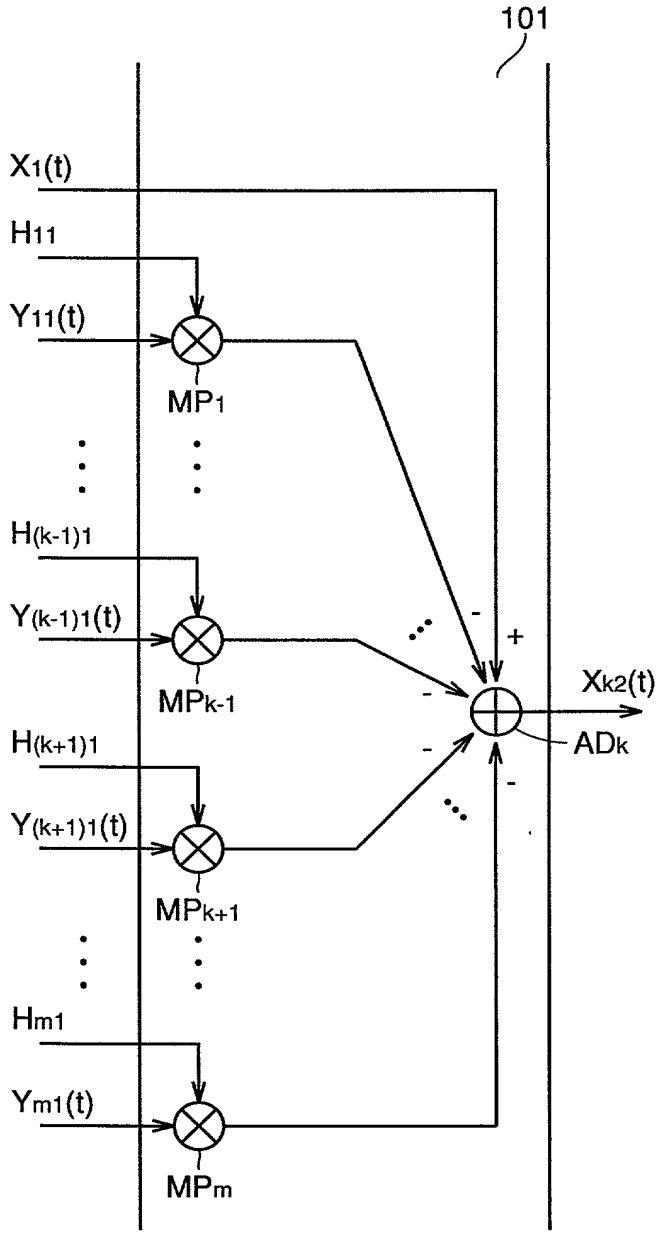

S1(t)
Sk(t)
Sm(t)
3
4
5
6
7
8
A/D
Lo
X1(t)
101
102
10L
OPERATING APPARATUS
PARAMETER ESTIMATOR
DETECTOR
ADAPTIVE ARRAY
PE11
PEk1
PEm1
PE12
PEk2
PEm2
H11
Hk1
Hm1
H12
Hk2
H1L
HkL
HmL
DE11
DEk1
DEm1
DE12
DEk2
DEm2
DE1(L+1)
DEk(L+1)
DEm(L+1)
AA11
AAk1
AAm1
AA12
AAk2
AAm2
AA1(L+1)
AAk(L+1)
AAm(L+1)
Y11(t)
Yk1(t)
Ym1(t)
Y12(t)
Yk2(t)
Ym2(t)
Y1L(t)
YkL(t)
YmL(t)
Y1(L+1)(t)
Yk(L+1)(t)
Ym(L+1)(t)
X12(t)
Xk2(t)
Xm2(t)
X13(t)
Xk3(t)
Xm3(t)
X1L(t)
XkL(t)
XmL(t)
X1(L+1)(t)
Xk(L+1)(t)
Xm(L+1)(t)
DETECTOR
S1(t)
Sk(t)
Sm(t)

FIG.2


101
X1(t)
H11
Y11(t)
MP1
H(k-1)1
Y(k-1)1(t)
MPk-1
H(k+1)1
Y(k+1)1(t)
MPk+1
Hm1
Ym1(t)
MPm
Xk2(t)
ADk
-
+

COPY OF ORIGINAL

FIG.3

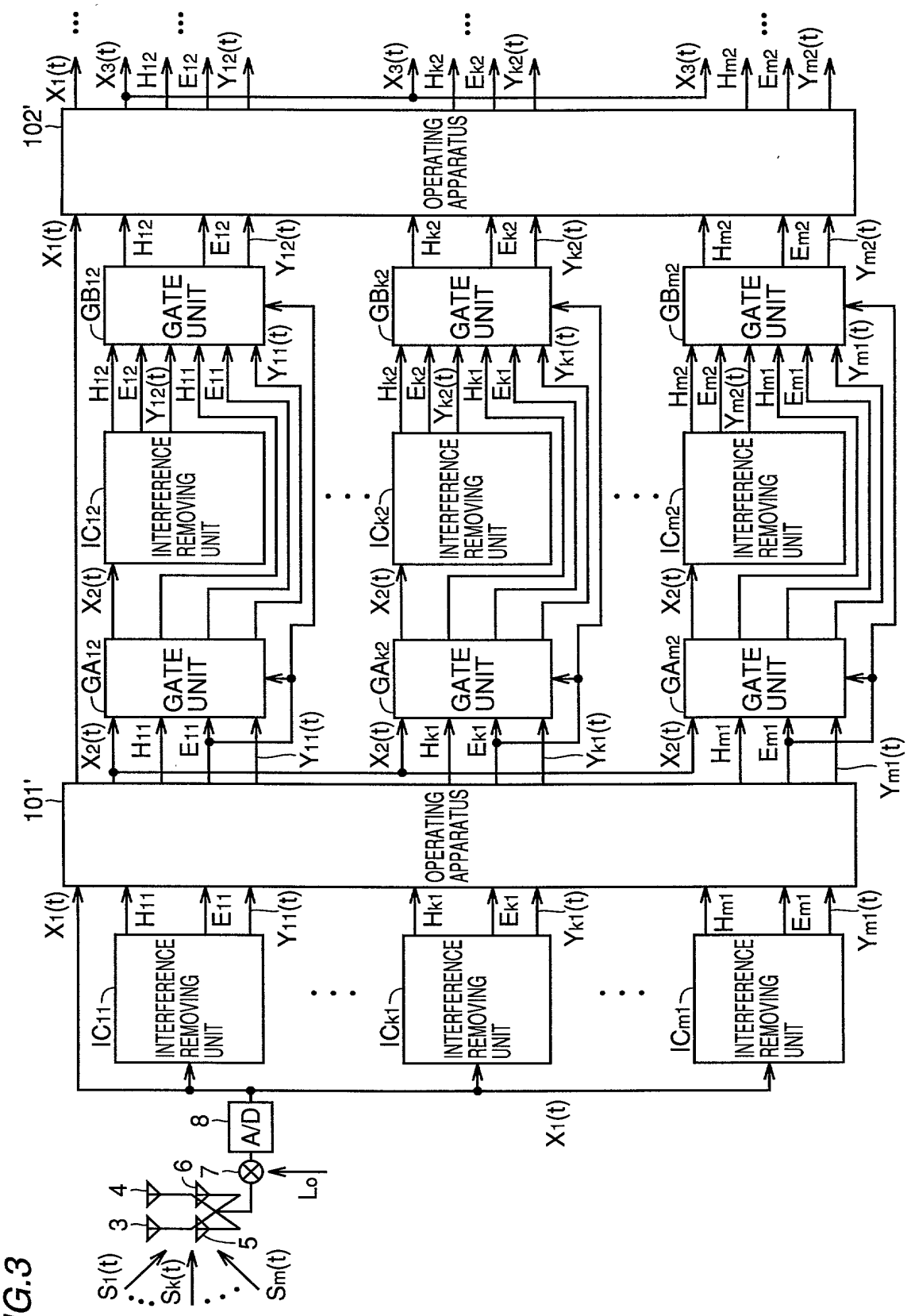


FIG.4

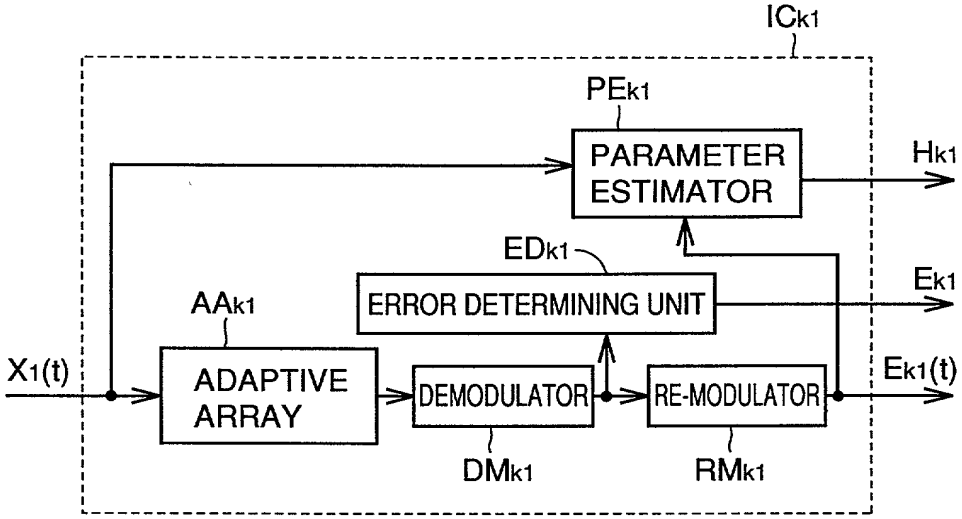
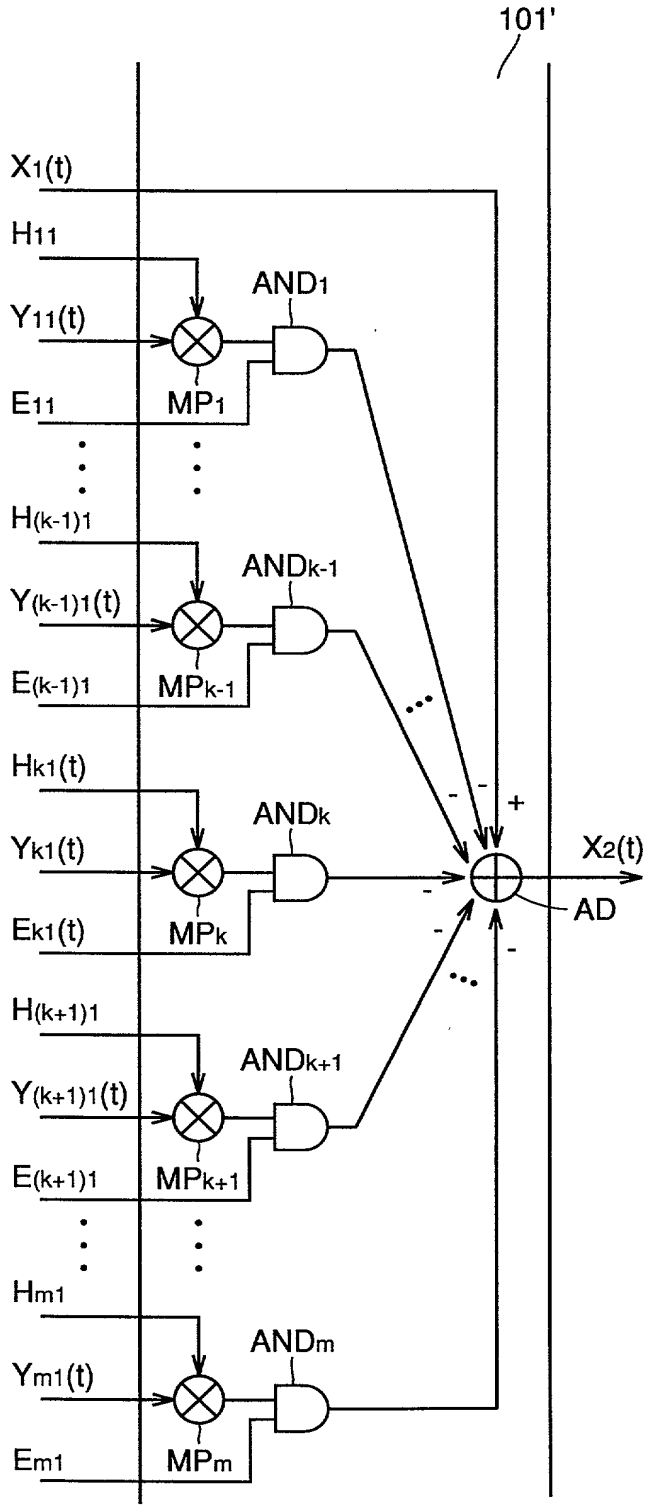

ICk1
PEk1
PARAMETER ESTIMATOR
Hk1
EDk1
ERROR DETERMINING UNIT
Ek1
AAk1
X1(t)
ADAPTIVE ARRAY
DEMODULATOR
RE-MODULATOR
Ek1(t)
DMk1
RMk1

FIG.5


101'
X1(t)
H11
Y11(t)
E11
MP1
AND1
H(k-1)1
Y(k-1)1(t)
E(k-1)1
MPk-1
ANDk-1
Hk1(t)
Yk1(t)
Ek1(t)
MPk
ANDk
H(k+1)1
Y(k+1)1(t)
E(k+1)1
MPk+1
ANDk+1
Hm1
Ym1(t)
Em1
MPm
ANDm
X2(t)
AD
+
-

Substitute Sheet

FIG.6

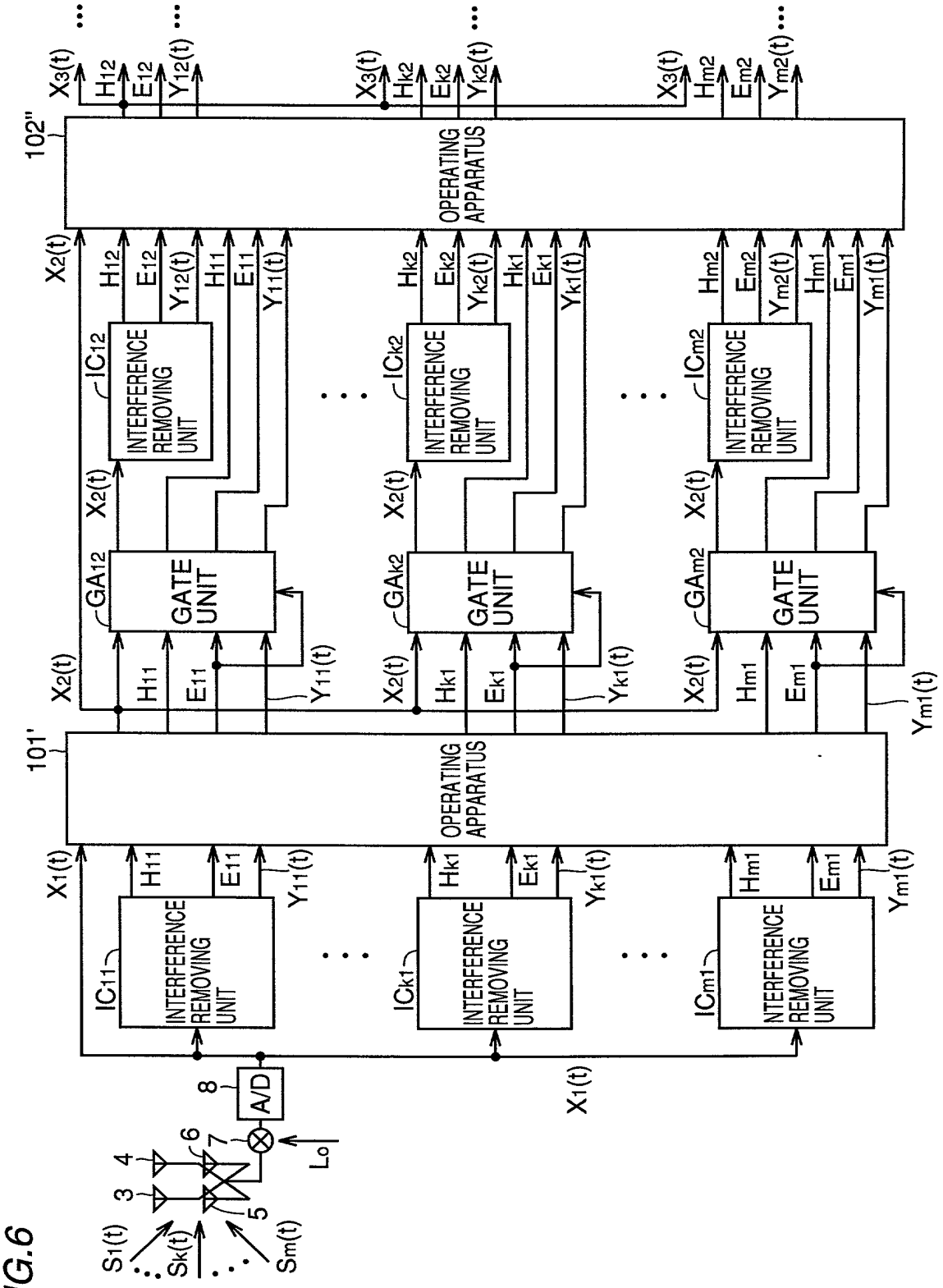


FIG.7

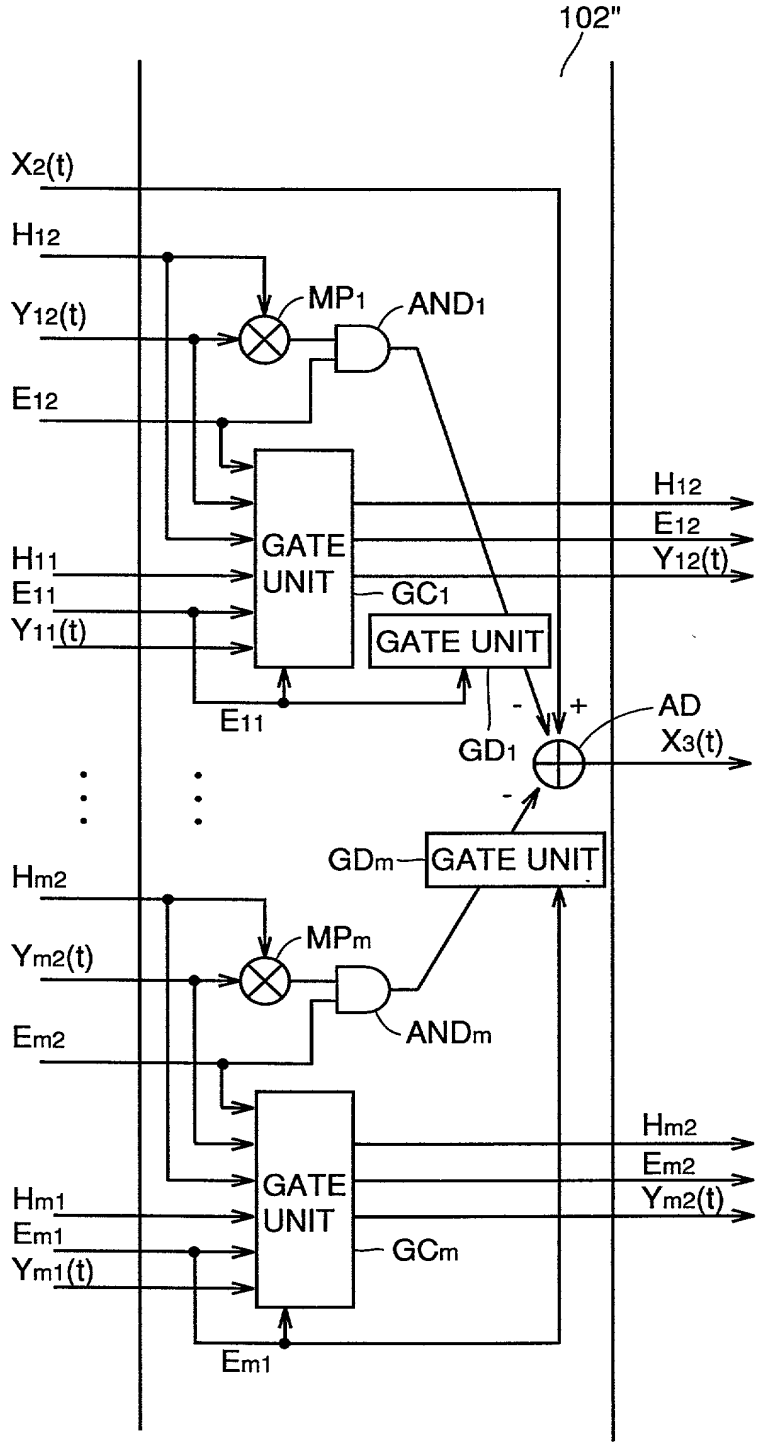
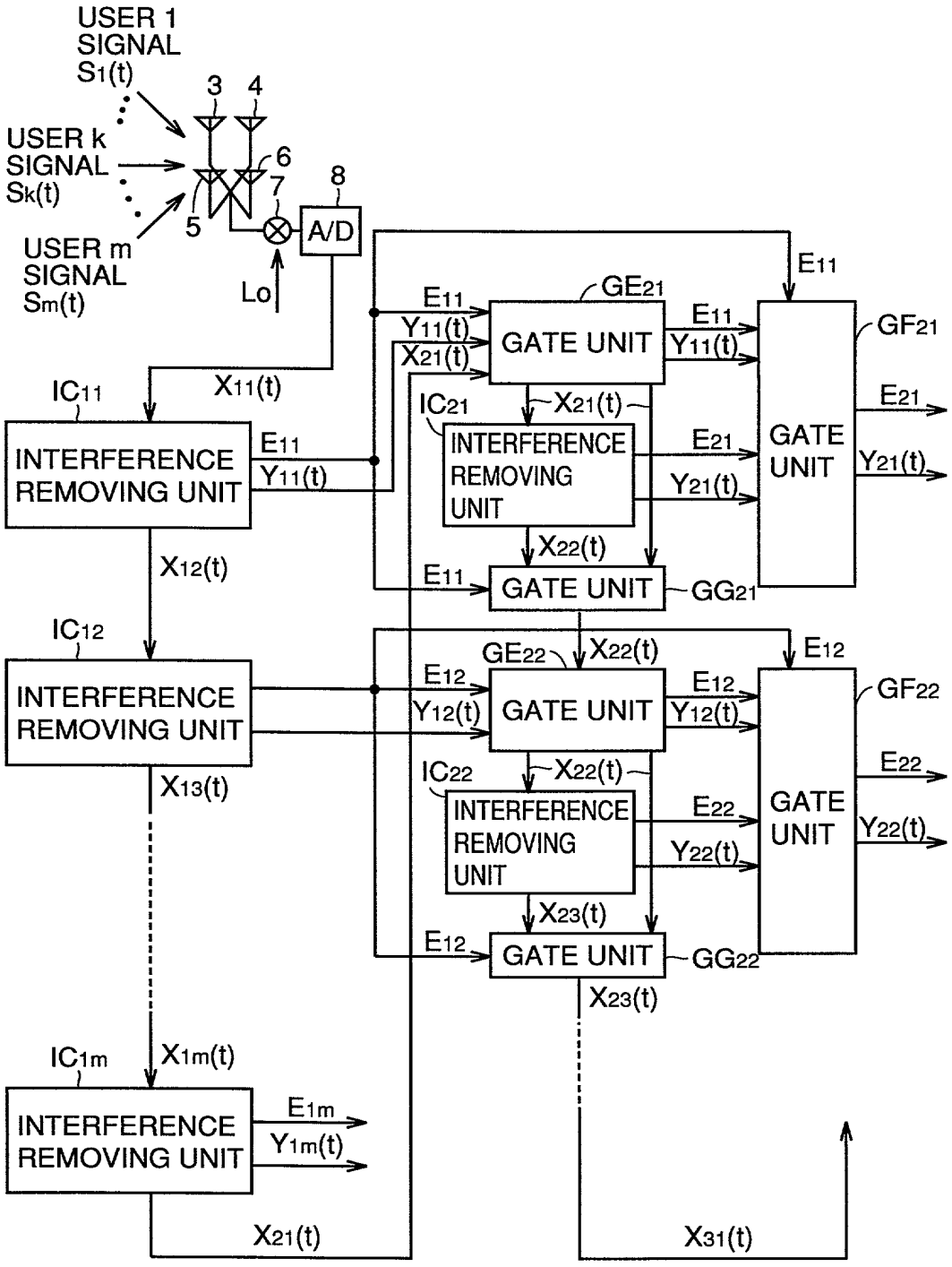

102"
X2(t)
H12
Y12(t)
E12
MP1
AND1
GATE UNIT
GC1
H11
E11
Y11(t)
E11
GATE UNIT
GD1
AD
X3(t)
H12
E12
Y12(t)
GDm
GATE UNIT
Hm2
Ym2(t)
Em2
MPm
ANDm
GATE UNIT
GCm
Hm1
Em1
Ym1(t)
Em1
Hm2
Em2
Ym2(t)

FIG.8


USER 1 SIGNAL S1(t)
USER k SIGNAL Sk(t)
USER m SIGNAL Sm(t)
3
4
5
6
7
8
A/D
Lo
X11(t)
IC11
INTERFERENCE REMOVING UNIT
E11
Y11(t)
X12(t)
IC12
INTERFERENCE REMOVING UNIT
X13(t)
IC1m
X1m(t)
INTERFERENCE REMOVING UNIT
E1m
Y1m(t)
X21(t)
GE21
GATE UNIT
Y11(t)
X21(t)
IC21
INTERFERENCE REMOVING UNIT
X21(t)
E21
Y21(t)
X22(t)
GG21
GF21
GATE UNIT
GE22
X22(t)
E12
Y12(t)
IC22
INTERFERENCE REMOVING UNIT
X23(t)
GG22
GF22
X31(t)

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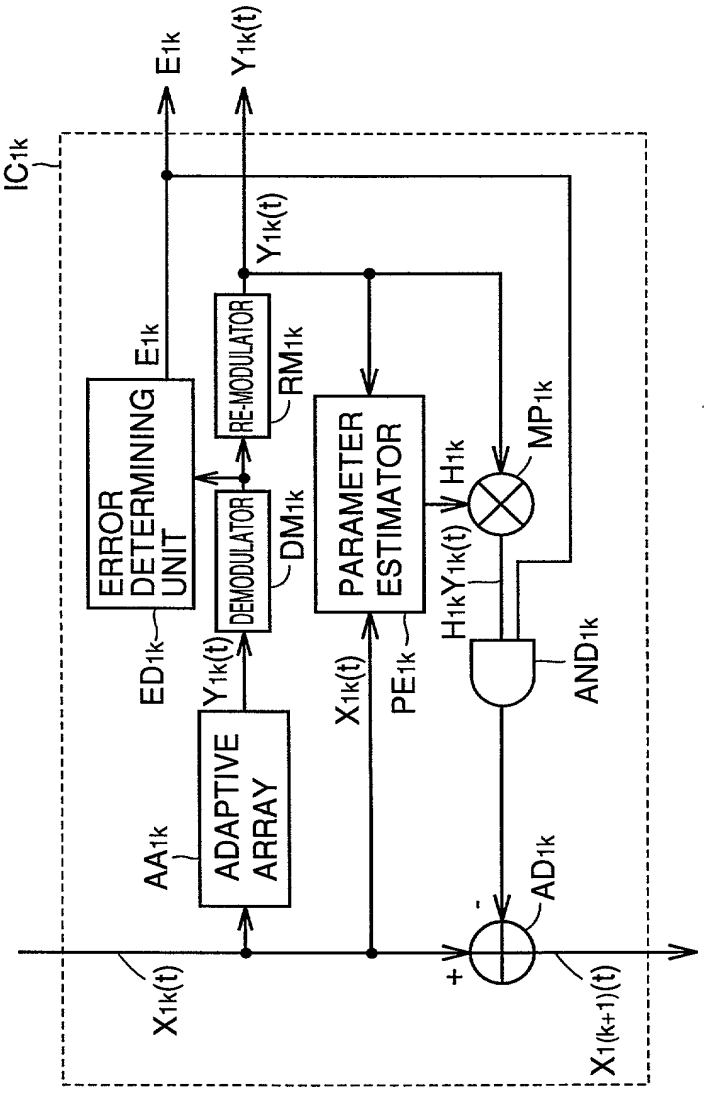

FIG.9

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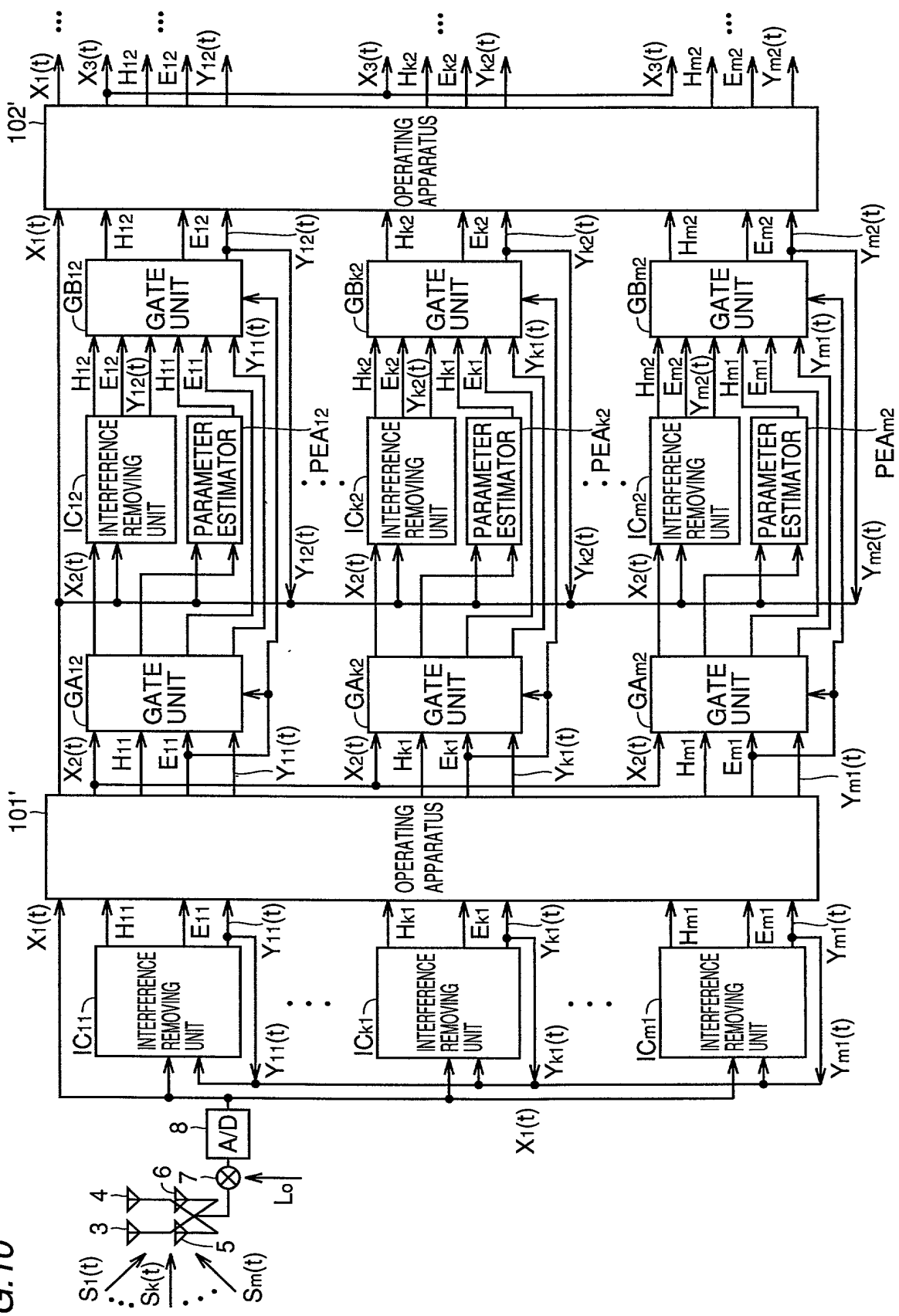
FIG.10



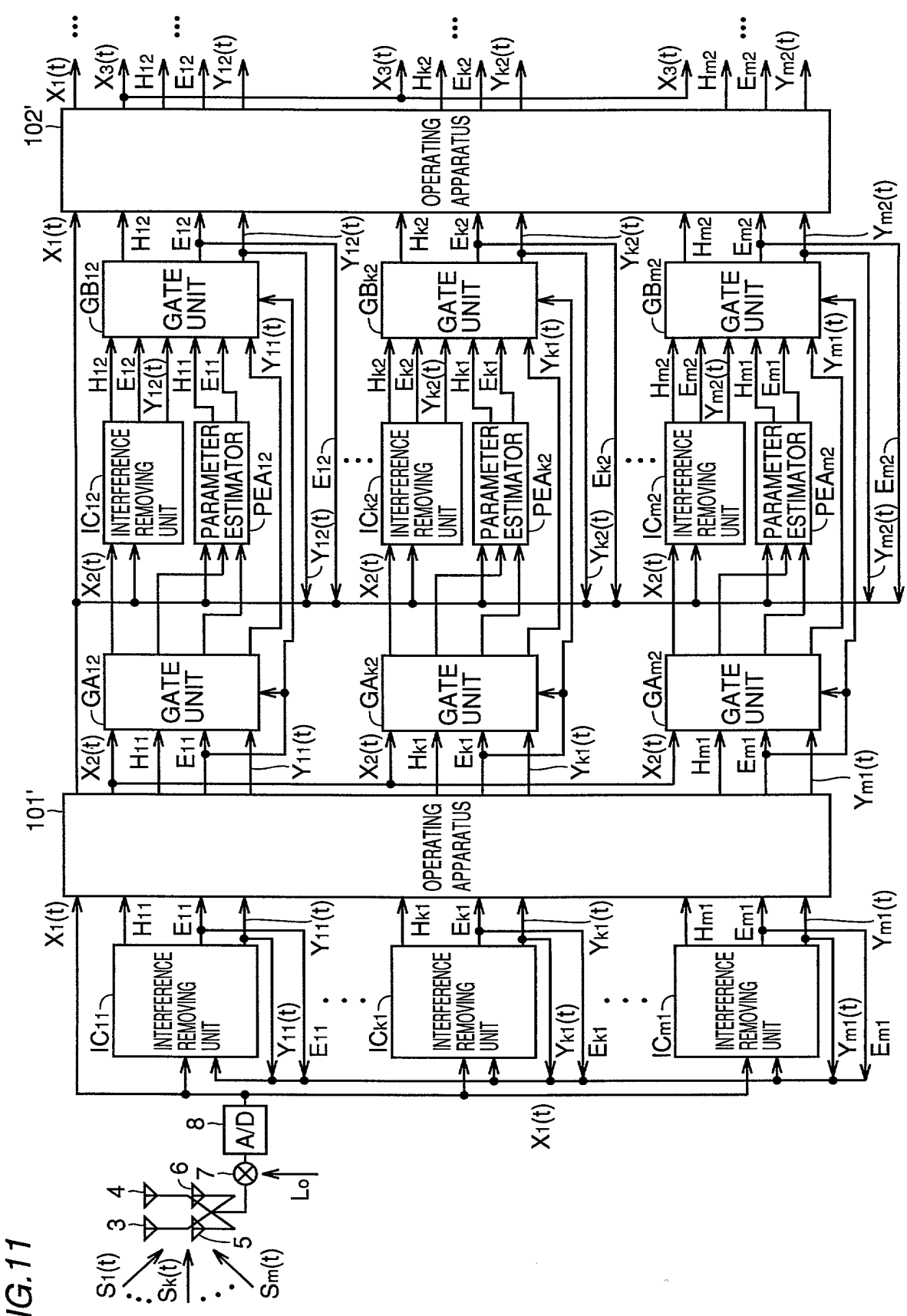

S1(t)
Sk(t)
Sm(t)
3
4
5
6
7
8
A/D
Lo
X1(t)
101'
102'
OPERATING APPARATUS
INTERFERENCE REMOVING UNIT
PARAMETER ESTIMATOR
GATE UNIT
IC11
ICk1
ICm1
IC12
ICk2
ICm2
PEA12
PEAk2
PEAm2
GA12
GAk2
GAm2
GB12
GBk2
GBm2
X2(t)
X3(t)
H11
Hk1
Hm1
H12
Hk2
Hm2
E11
Ek1
Em1
E12
Ek2
Em2
Y11(t)
Yk1(t)
Ym1(t)
Y12(t)
Yk2(t)
Ym2(t)

FIG.11

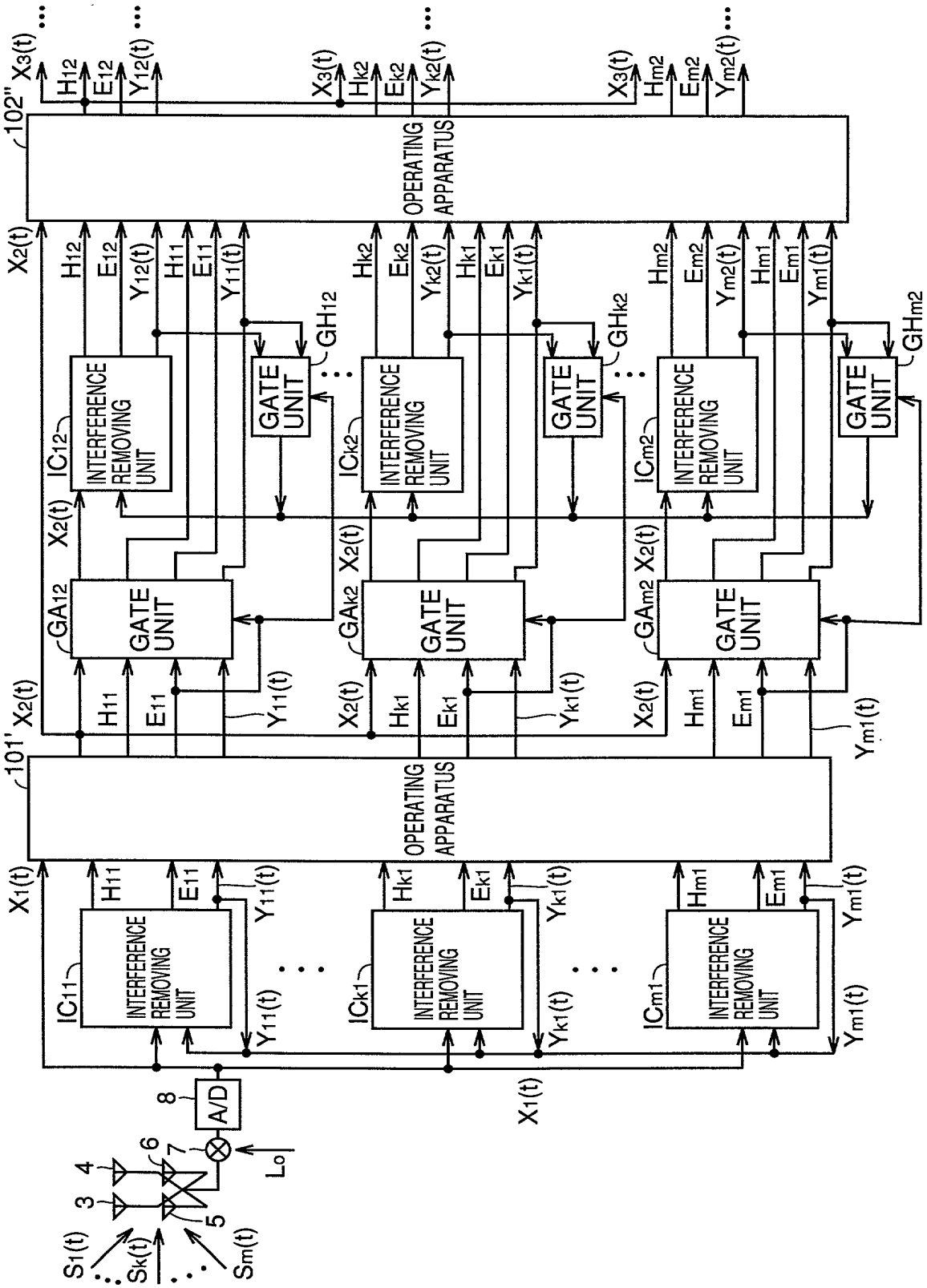

102"
101'
OPERATING APPARATUS
INTERFERENCE REMOVING UNIT
GATE UNIT
A/D
$X_1(t)$
$X_2(t)$
$X_3(t)$
H_{11}
E_{11}
$Y_{11}(t)$
H_{12}
E_{12}
$Y_{12}(t)$
H_{k1}
E_{k1}
$Y_{k1}(t)$
H_{k2}
E_{k2}
$Y_{k2}(t)$
H_{m1}
E_{m1}
$Y_{m1}(t)$
H_{m2}
E_{m2}
$Y_{m2}(t)$
IC_{11}
IC_{12}
IC_{k1}
IC_{k2}
IC_{m1}
IC_{m2}
GA_{12}
GA_{k2}
GA_{m2}
GH_{12}
GH_{k2}
GH_{m2}
$S_1(t)$
$S_k(t)$
$S_m(t)$
L_o
3
4
5
6
7
8

FIG. 12

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FIG.13

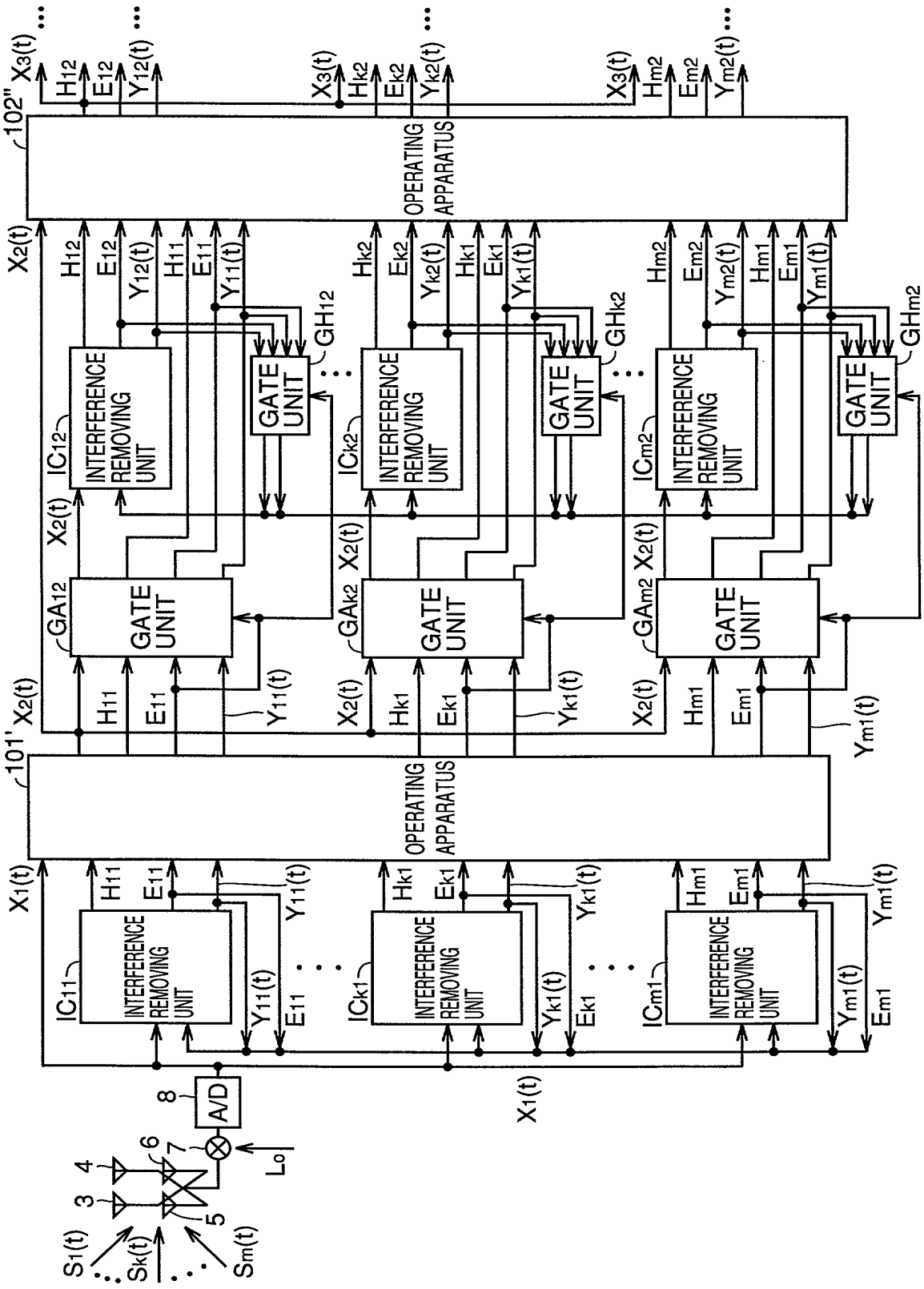


FIG.14

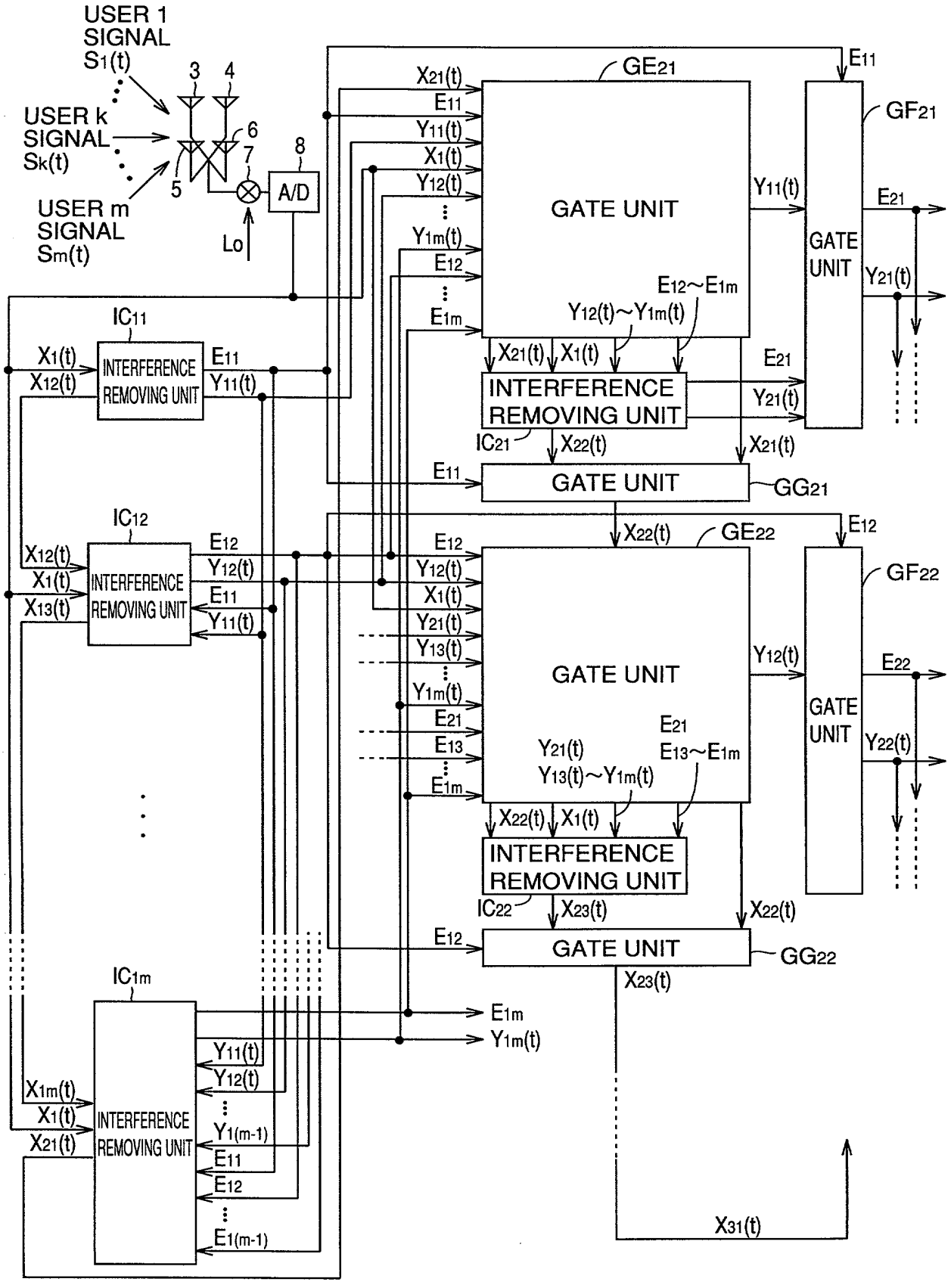
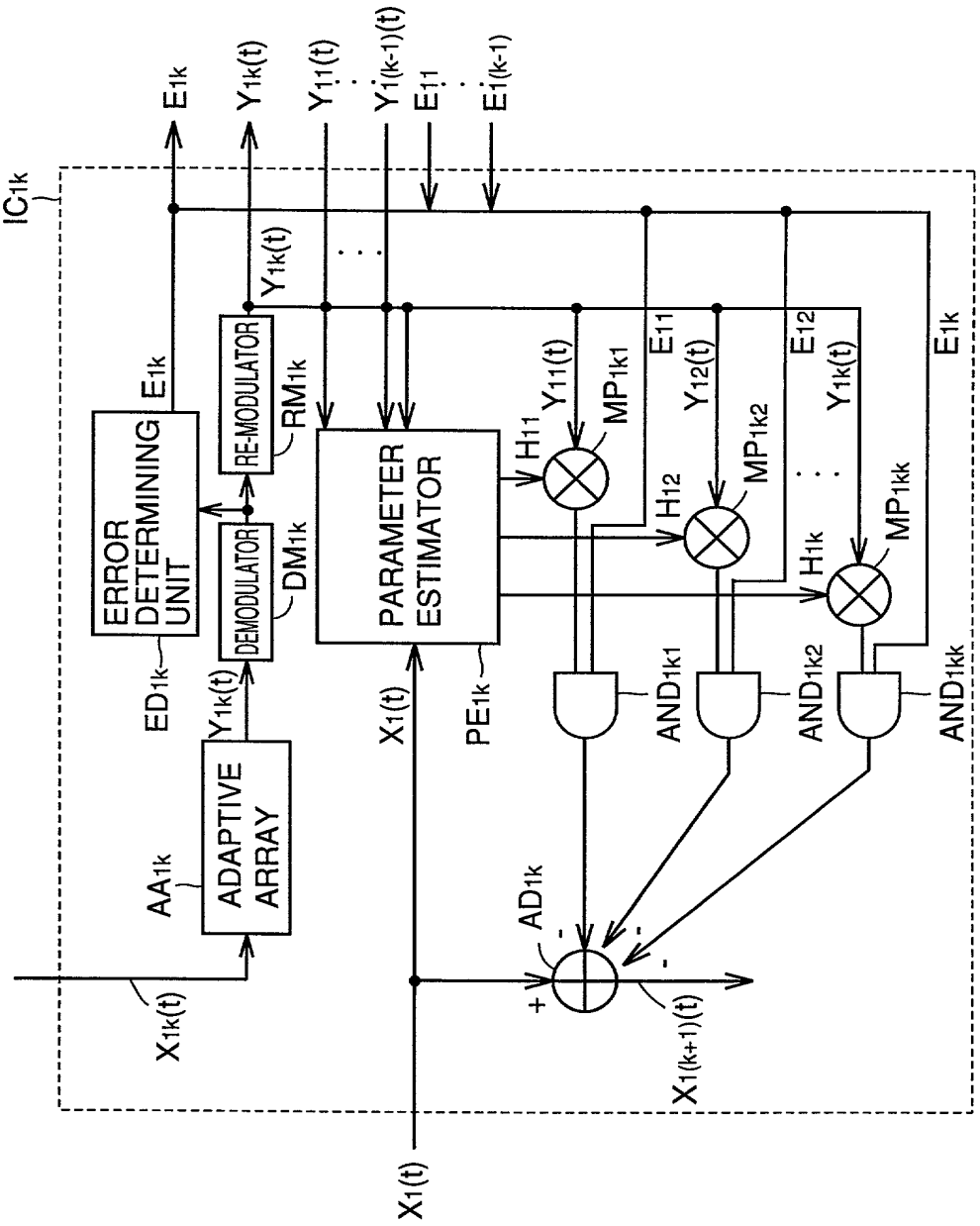
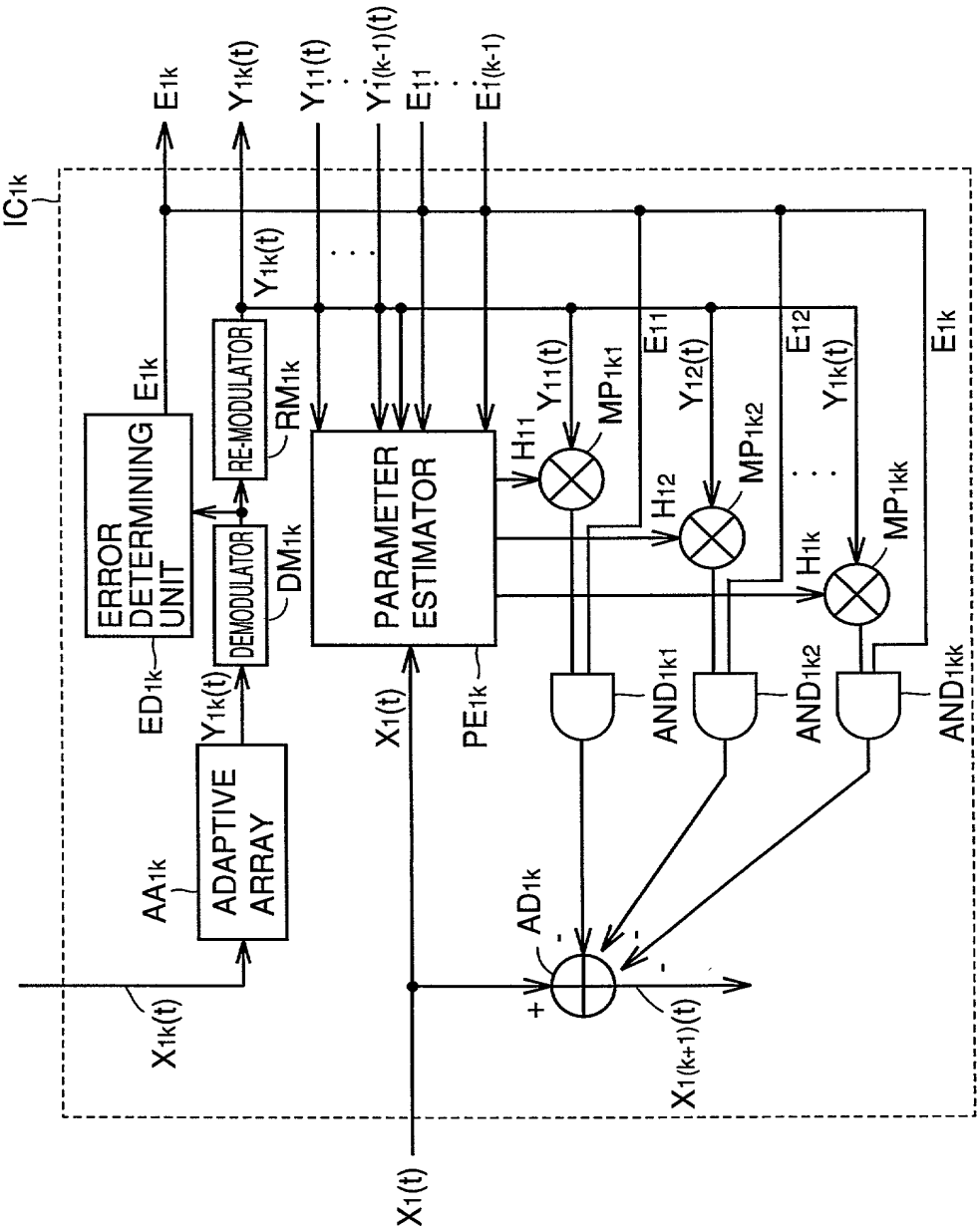

USER 1 SIGNAL S1(t)
USER k SIGNAL Sk(t)
USER m SIGNAL Sm(t)
3
4
5
6
7
8
A/D
Lo
GATE UNIT
GE21
GF21
GG21
GE22
GF22
GG22
GATE UNIT
INTERFERENCE REMOVING UNIT
IC11
IC12
IC1m
IC21
IC22
X1(t)
X12(t)
X13(t)
X21(t)
X22(t)
X23(t)
X31(t)
X1m(t)
E11
E12
E13
E1m
E21
Y11(t)
Y12(t)
Y21(t)
Y22(t)
Y1m(t)
E12~E1m
Y12(t)~Y1m(t)
E21
E13~E1m
Y13(t)~Y1m(t)
Y1(m-1)
E1(m-1)

FIG.15


IC1k
E1k
Y1k(t)
Y11(t)
Y1(k-1)(t)
E11
E1(k-1)
ERROR DETERMINING UNIT
ED1k
RE-MODULATOR
RM1k
DEMODULATOR
DM1k
PARAMETER ESTIMATOR
PE1k
ADAPTIVE ARRAY
AA1k
X1k(t)
X1(t)
H11
H12
H1k
MP1k1
MP1k2
MP1kk
E12
AND1k1
AND1k2
AND1kk
AD1k
X1(k+1)(t)

20070907 090907

FIG.16



Copyright 2004

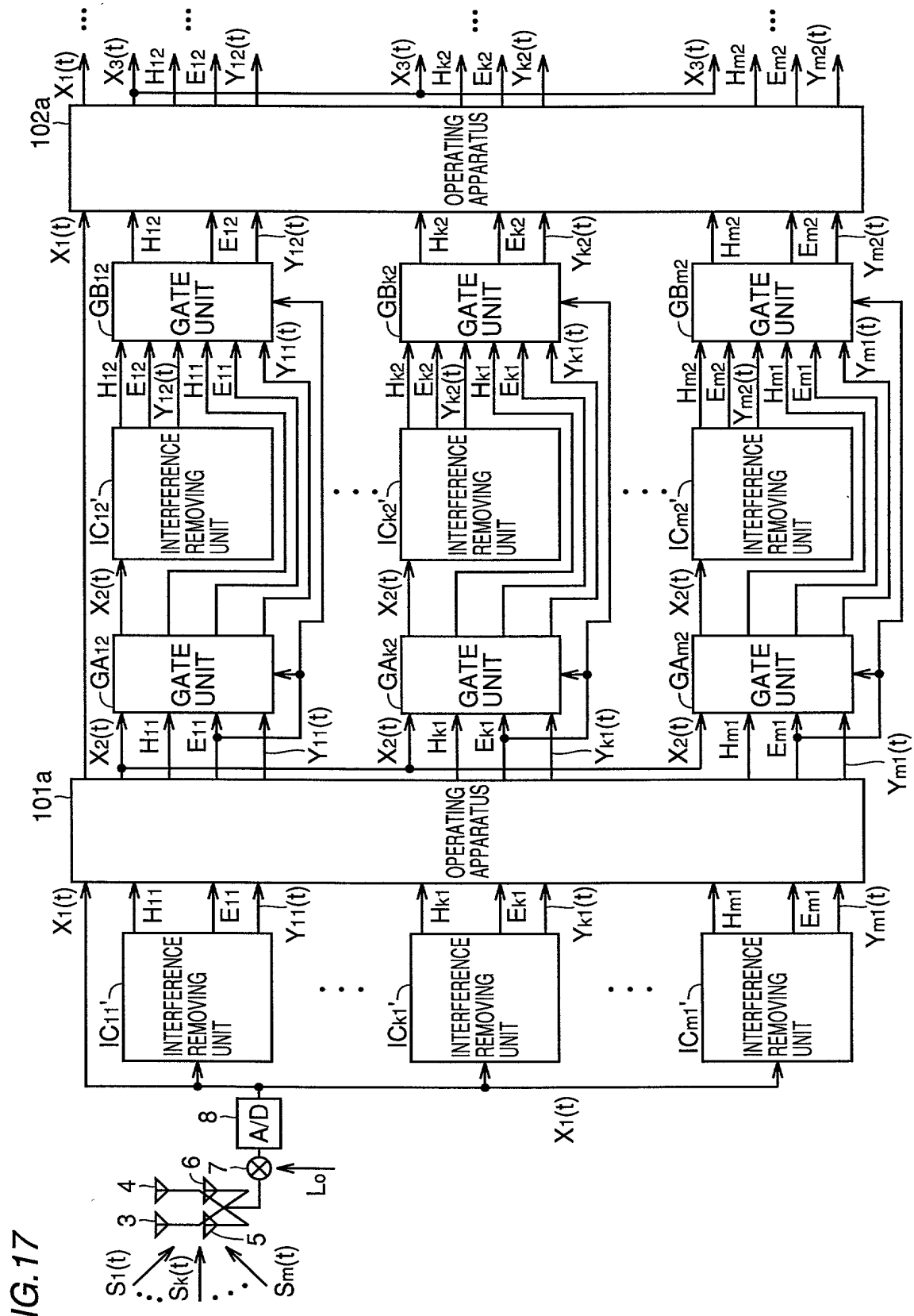


FIG.17

Record Copy

FIG.18

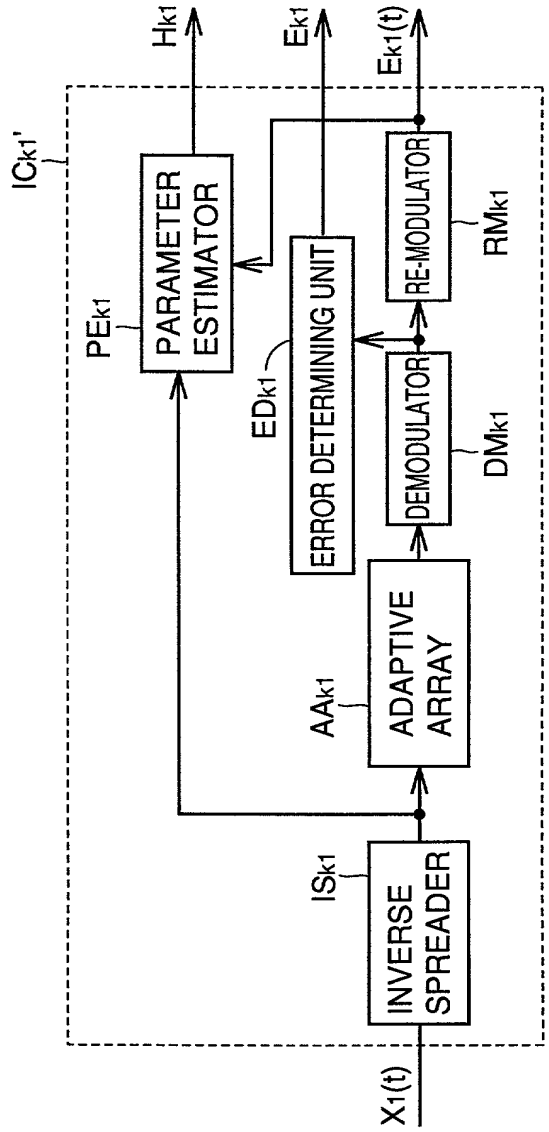
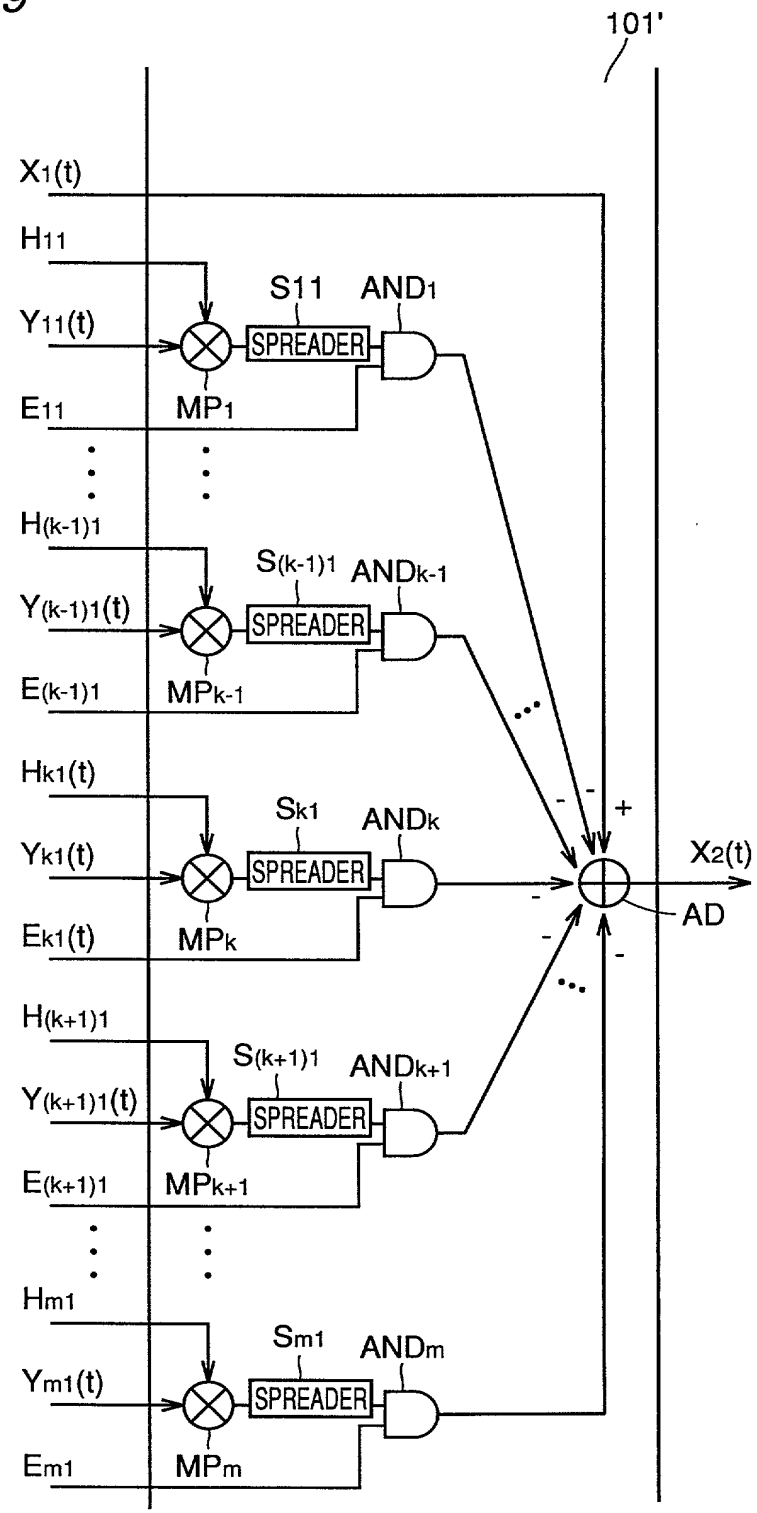
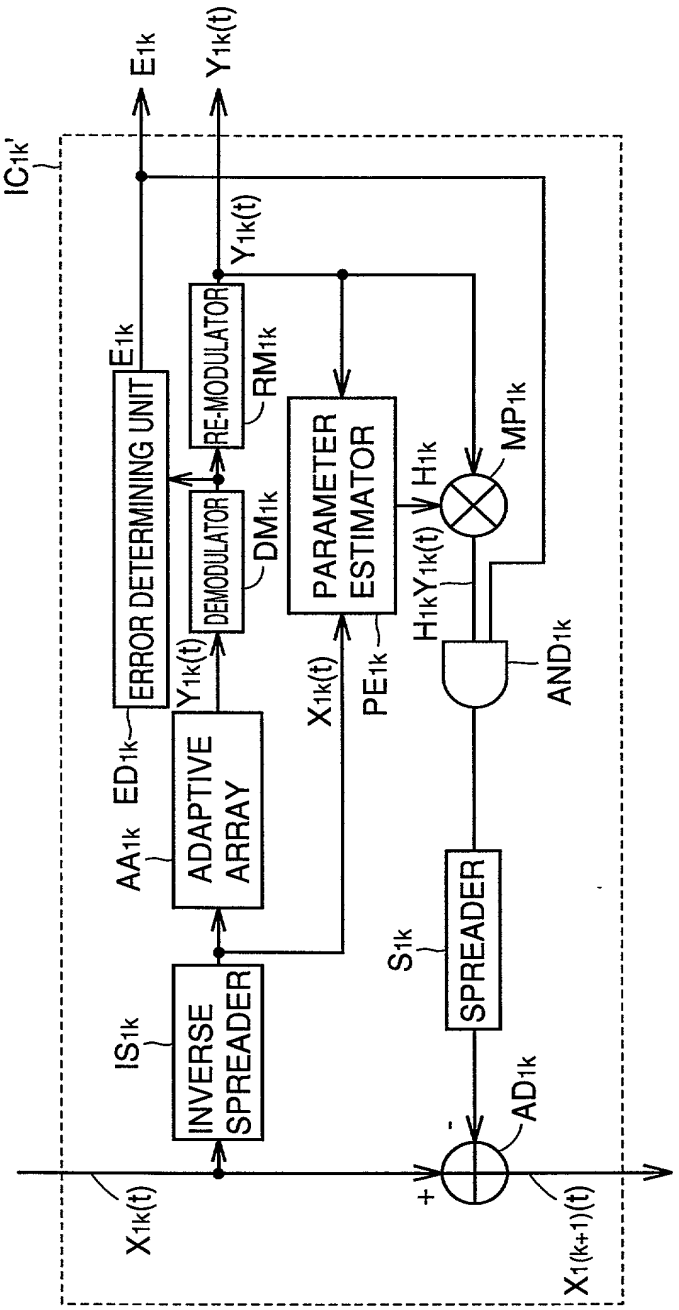


FIG.19


101'
X1(t)
H11
Y11(t)
E11
MP1
S11
AND1
SPREADER
H(k-1)1
Y(k-1)1(t)
E(k-1)1
MPk-1
S(k-1)1
ANDk-1
Hk1(t)
Yk1(t)
Ek1(t)
MPk
Sk1
ANDk
H(k+1)1
Y(k+1)1(t)
E(k+1)1
MPk+1
S(k+1)1
ANDk+1
Hm1
Ym1(t)
Em1
MPm
Sm1
ANDm
X2(t)
AD

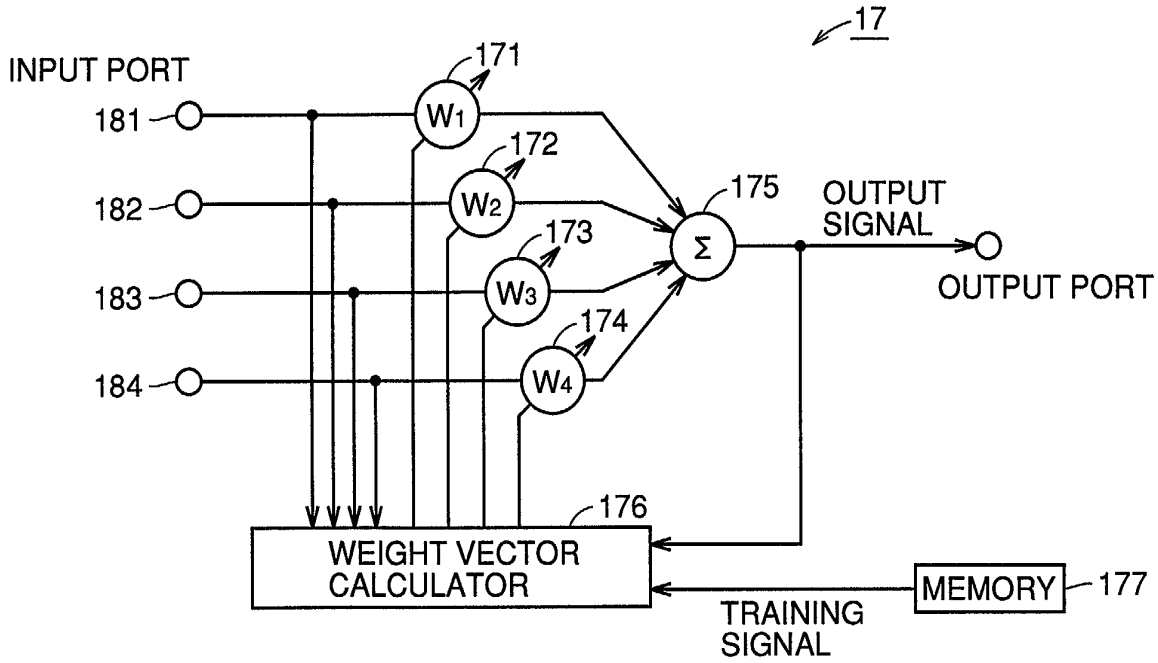
EDITED - ACCEPTED

FIG.20



20604D 9706900T

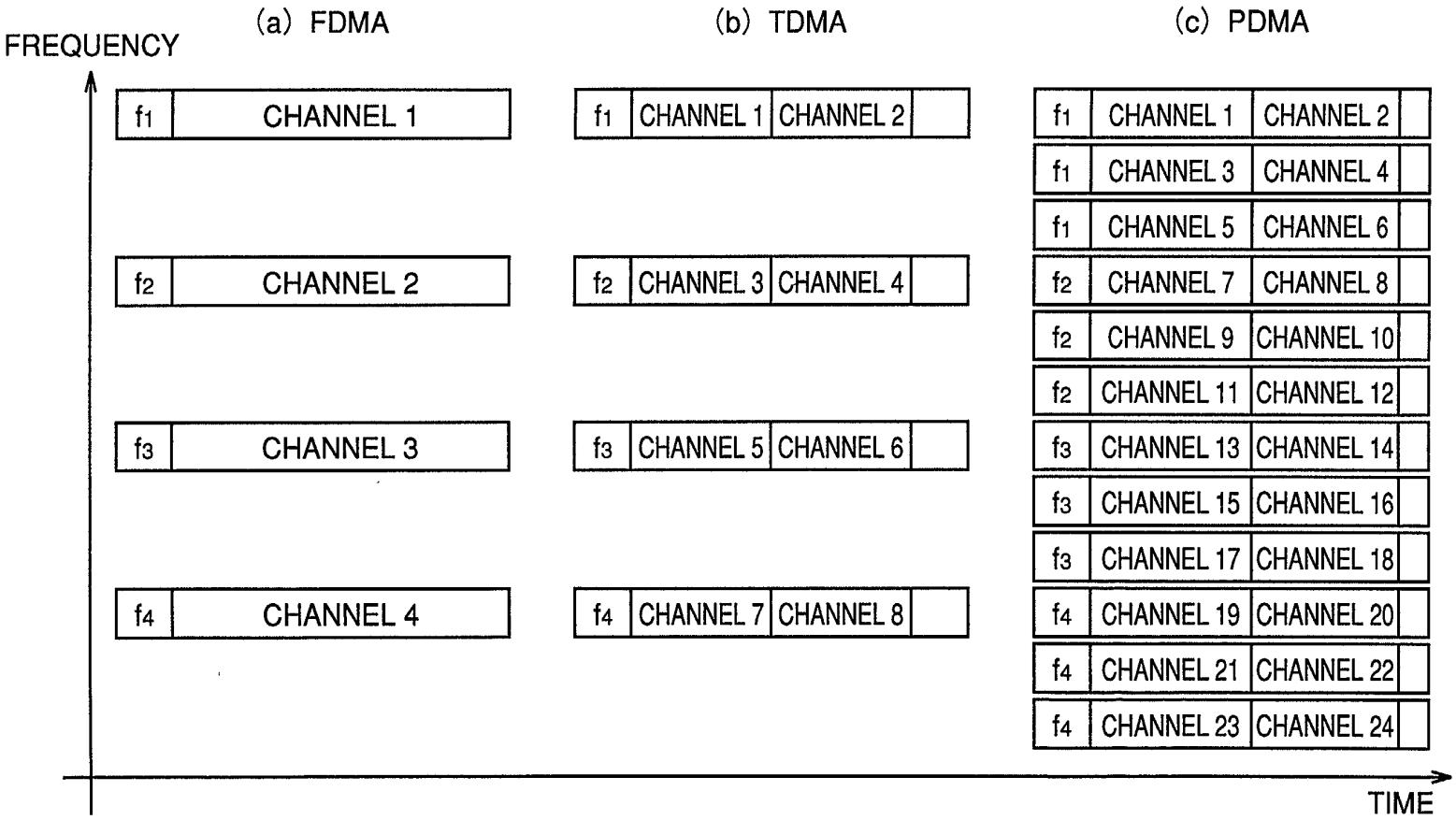
FIG.21



10/03076

20030401 A2003080GT

FIG.22 PRIOR ART



10/089076

JP020076 "020076"

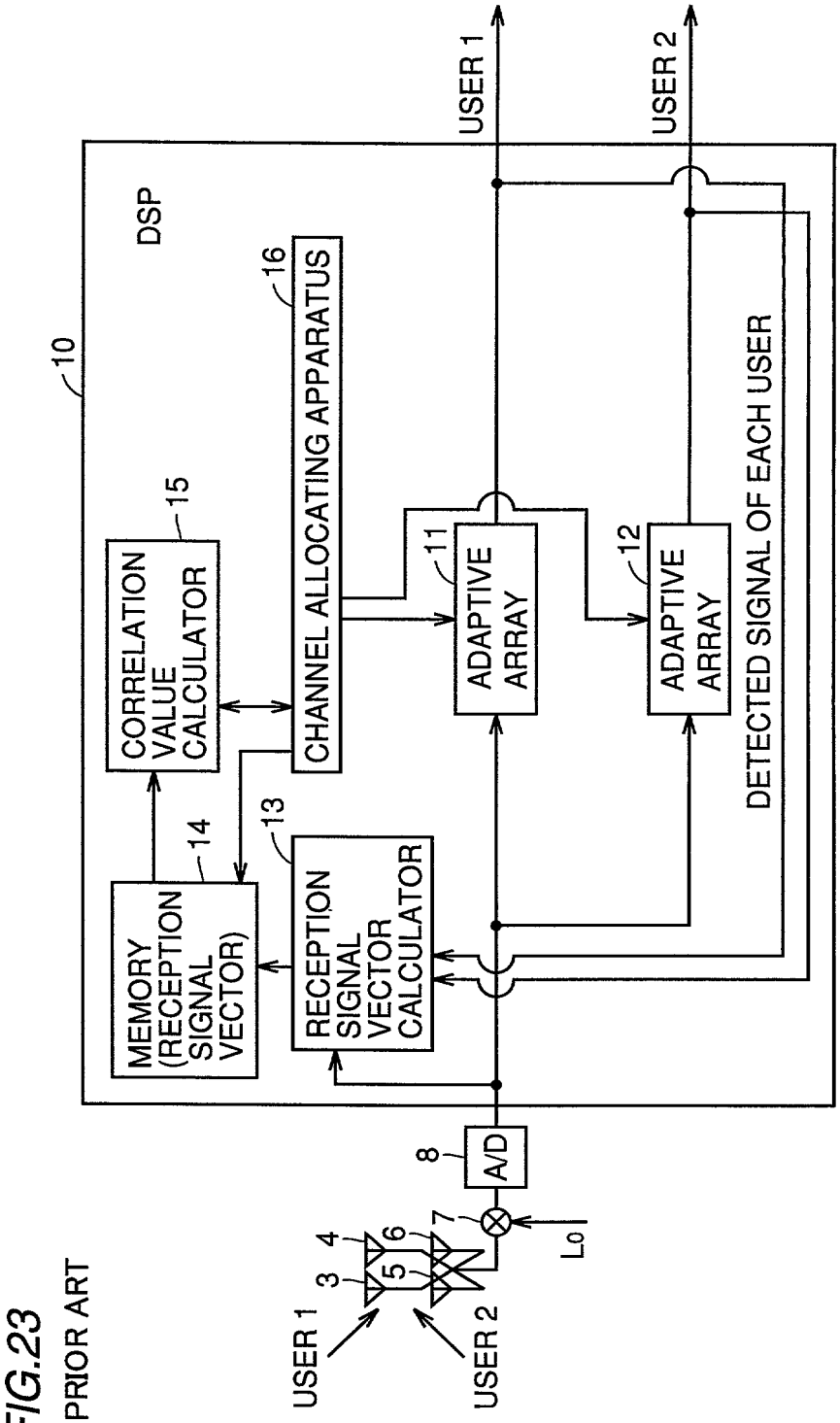


FIG.23
PRIOR ART